

Philippe Berger

Jet Propulsion Laboratory, M/S 169-237
4800 Oak Grove Drive, Pasadena, CA 91109
pberger@jpl.nasa.gov | 626-658-1295
<https://science.jpl.nasa.gov/people/PBerger/>

PROFESSIONAL EXPERIENCE

2018-Current	NASA Jet Propulsion Laboratory <i>Post-Doctoral Scholar - Structure of the Universe group - Visiting Scholar Caltech</i>	Pasadena CA, USA
2014-2018	University of Toronto <i>Teaching Assistant</i>	Toronto, CA

- Leading analysis of the all-sky radio and microwave data from the Juno spacecraft Cruise Mission to Jupiter.
- Courses: PHY350 - Electromagnetic Theory, PHY252 - Thermal Physics, PHY450 - Statistical Mechanics, PHY151 - Foundations of Physics

EDUCATION

2014-2018	University of Toronto <i>PhD – Physics</i> <i>Thesis: End-to-End Pipeline Methods for Full-Sky 21 cm Cosmology: Application to the CHIME Pathfinder Array</i>	Toronto, CA
2012-2014	University of Geneva <i>Master of Science – Physics – Theoretical Physics</i> <i>Thesis: Symmetry in the Large Scale Structure and its Application to the Problem of Cosmic Magnetic Fields</i>	Geneva, CH
2009-2012	Concordia University <i>Bachelor of Science with Distinction – Specialization in Pure & Computational Physics – Minor Mathematics and Statistics</i>	Montreal, CA

PUBLICATIONS

Published in refereed journals

- R. M. Feder, **P. Berger**, G. Stein, “Nonlinear 3D Cosmic Web Simulation with Heavy-Tailed Generative Adversarial Networks,” Phys. Rev. D 102, 103504 (2020) [arXiv: [2005.03050](https://arxiv.org/abs/2005.03050)]
- N. Denman, A. Renard, K. Vanderlinde, **P. Berger**, K. Masui, I. Tretyakov, and the CHIME Collaboration, “A GPU Spatial Processing System for CHIME,” JAI, Vol. 09, No. 03, 2050014 (2020) [arXiv: [2005.09481](https://arxiv.org/abs/2005.09481)]
- P. C. Breysse, C. J. Anderson and **P. Berger**, “Canceling Out Intensity Mapping Foregrounds,” Phys. Rev. Lett., Vol. 123, 23, 2019, [arXiv: [1907.04369](https://arxiv.org/abs/1907.04369)]
- J. Taylor, N. Denman, K. Bandura, **P. Berger**, K. Masui, A. Renard, I. Tretyakov, K. Vanderlinde, “Spectral Kurtosis-based RFI mitigation for CHIME,” JAI special issue on RFI mitigation, 2018 Vol. 08 No. 01, [arXiv:[1808.10365](https://arxiv.org/abs/1808.10365)]
- **P. Berger** & G. Stein, “A volumetric deep Convolutional Neural Network for simulation of dark matter halo catalogs,” MNRAS, 482, 3, 2019 [arXiv:[1805.04537](https://arxiv.org/abs/1805.04537)]

- The CHIME/FRB Collaboration, “*The CHIME Fast Radio Burst Project: System Overview*,” ApJ, 863, 1, 2018 [arXiv:[1803.11235](https://arxiv.org/abs/1803.11235)]
- **P. Berger**, N. Oppermann, U.-L. Pen and J. R. Shaw, “*An efficient method for removing point sources from full-sky radio interferometric maps*,” Mon. Not. Roy. Astron. Soc. 472 (Dec. 2017) 4928–4934 [arXiv:[1612.03255](https://arxiv.org/abs/1612.03255)]
- M. Amiri, K. Bandura, **P. Berger**, J. R. Bond, J. F. Cliche, L. Connor et al., “*Limits on the Ultra-bright Fast Radio Burst Population from the CHIME Pathfinder*,” Astrophys. J. 844 (Aug. 2017) 161 [arXiv:[1702.08040](https://arxiv.org/abs/1702.08040)]
- **P. Berger**, A. Kehagias and A. Riotto, “*Testing the Origin of Cosmological Magnetic Fields Using the Large-Scale Structure Consistency Relations*,” JCAP, 1405, 025 (2014) [arXiv:[1402.1044](https://arxiv.org/abs/1402.1044)]

Refereed conference proceedings

- **P. Berger**, L. B. Newburgh *et al.*, “*Holographic beam mapping of the CHIME pathfinder array*,” in Proc. SPIE: Ground-based and Airborne Telescopes VI, vol. 9906, p. 99060D, Aug. 2016 [arXiv:[1607.01473](https://arxiv.org/abs/1607.01473)]

Non-refereed contributions

- T. C. Chang *et al.*, “*Tomography of the Cosmic Dawn and Reionization Eras with Multiple Tracers*,” submitted as Astro2020 Science White Paper [arXiv: [1903.11744](https://arxiv.org/abs/1903.11744)]

PROFESSIONAL & TECHNICAL SKILLS

- Fluent in English, French, and conversational Hebrew
- More than 6 years of development experience in a high-performance parallel computing environment with Python, Julia, Fortran, and C/C++ programming languages, and associated scientific, numerical, and data analysis libraries (e.g. scipy, numpy, cython, matplotlib, pandas, astropy, scikit-learn, tensorflow, keras, pytorch, MPI, OpenMP, OpenACC, BLAS, LAPACK, ScaLAPACK, GSL).

SCHOLARSHIPS AND AWARDS

Sept 2016-	University of Toronto	Toronto ON
June 2017	<i>James Gordon Steele Fellowship</i>	
Sept 2012-	University of Geneva	Geneva CH
June 2014	<i>Excellence Masters Fellowship</i>	